Carbon Cycle 2.0

Pioneering science for sustainable energy solutions

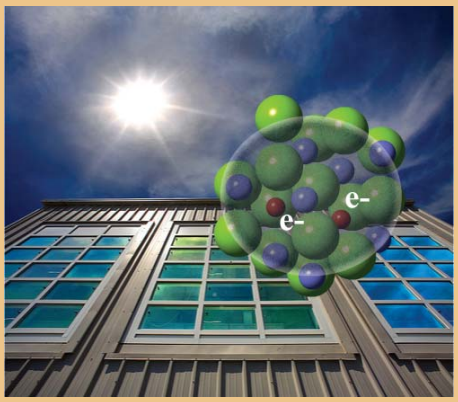
Carbon Cycle 2.0 LDRD Seminar Series

The Carbon Cycle 2.0 initiative is hosting a weekly seminar series given by recipients of Laboratory Directed Research and Development (LDRD) awards related to climate and energy. The seminars will take place most Thursdays at 2 pm in the new User Support Building large conference room (15-253) and are open to anyone interested in learning more about the wide variety of Carbon Cycle 2.0-themed research at Berkeley Lab.

Manipulating the plasmon resonance of metal oxide nanocrystals for dynamic window coatings

Delia Milliron
The Molecular Foundry, LBNL

WHEN: FRIDAY MAY 27, 2PM - 3PM
WHERE: BUILDING 50A ROOM 5132



Plasmons are light-induced collective oscillations of the free electrons in a metal. In heavily doped metal oxide nanocrystals, they exist as localized surface plasmons that give rise to an optical absorption feature in the infrared spectral range. The wavelength of this absorption peak can be modified by varying the amount of dopant incorporated into the nanocrystals during their chemical synthesis.

I will overview our efforts to manipulate such plasmon resonance features, following an innovation cycle of new materials development, investigation of optical and structural properties, and integration into prototype devices. We have demonstrated that the surface plasmon absorption of a nanocrystal film can be dynamically and reversibly tuned across the near infrared spectrum while maintaining excellent transparency for visible light. These properties are of keen interest for a new breed of carbon-saving, dynamic window coatings that can modulate solar heating while consistently supplying daylight.